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Middle Name

fiston

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tshitadi

Date of Birth

10/11/1982

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Nickname



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1 hr 44 min

Welcome to the 350-401 ENCOR Study Material page. This page is designed to help you quickly find what you are looking for by organizing the content according to the exam topics.

These resources are meant to supplement your learning experience and exam preparation. They are NOT designed to serve as a complete self-study program, but intended only as a suggested starting point.

Plan activities
Accordion Arrow
Enterprise
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Clock
1 hr 14 min
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Lesson 1: Overview of CCNP Enterprise Track

Enterprise: Lesson 1: Overview of CCNP Enterprise Track

MP4
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11 min

Lesson 2: CCNP Enterprise Exam Blueprint

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9 min

Lesson 3: CCNP Enterprise Sample Questions

Enterprise: Lesson 3: CCNP Enterprise Sample Questions

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Lesson 4: How to Prepare for the Enterprise Core Exam

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32 min

Lesson 5: Questions and Answers

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MP4

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12 min

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Architecture

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Cisco Exam Review: ENCOR

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Enterprise Campus Design: Multilayer Architectures and Design

Principles

Architecture

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Site Survey Guidelines for WLAN Deployment

Architecture

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Indoor Mesh Deployment Guide

Architecture

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WLAN RF Design Considerations

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Cisco SD-Access - A Look Under the Hood - BRKCRS-2810

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Cisco DNA SD-Access (SDA) - Introduction to SDA Fabric - BRKARC-2009

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Enterprise QoS Solution Reference Network Design Guide

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Enterprise QoS Design - BRKCRS-2501

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QoS Design and Deployment for Wireless LANs - BRKRST-2515

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How to Choose the Best Router Switching Path for Your Network

Architecture

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IOS Routing Internals - BRKARC-2350

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Virtualization

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Virtualization

Virtualization

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Network Virtualization--Path Isolation Design Guide

Virtualization

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Virtual Route Forwarding Design Guide - Introduction

Virtualization

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Introduction to LISP and VXLAN - Scalable Technology Overlays for Switching

Virtualization BRKRST-3045

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Introduction to VXLAN: The future path of your datacenter - BRKDCN-1645

Virtualization

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LISP - A Next Generation Networking Architecture - BRKRST-3045

Virtualization

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Infrastructure

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Clock

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Inter-Switch Link and IEEE 802.1Q Frame Format

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Software Configuration Guide, Chapter: Configuring VLANs

Infrastructure Catalyst 3750-X and 3560-X Software Configuration Guide, Release 15.0(1)SE Chapter: Configuring VLANs

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Understanding EtherChannel Load Balancing and Redundancy on Catalyst Switches

Infrastructure

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Software Configuration Guide, Chapter: Configuring EtherChannels and More

Infrastructure Catalyst 3750-X and 3560-X Software Configuration Guide, Release 15.0(1)SE Chapter: Configuring EtherChannels and Link-State Tracking

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Spanning Tree Protocol Problems and Related Design Considerations

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Understanding Rapid Spanning Tree Protocol (802.1w)

This document provides information about the enhancements added by RSTP to the previous 802.1D standard.

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Understanding Multiple Spanning Tree Protocol (802.1s)

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Understanding Spanning-Tree Protocol Topology Changes

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Software Configuration Guide, Chapter: Configuring STP

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Software Configuration Guide, Chapter: Configuring MSTP

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Understanding and Tuning Spanning Tree Protocol Timers

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Spanning Tree PortFast BPDUs Guard Enhancement

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Configuring Spanning Tree PortFast, BPDUs Guard, and More

Infrastructure Configuring Spanning Tree PortFast, BPDUs Guard, BPDUs Filter, UplinkFast, BackboneFast, and Loop Guard

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Spanning Tree Protocol Root Guard Enhancement

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Spanning-Tree Protocol Enhancements using Loop Guard and BPDUs Skew Detection

Infrastructure Spanning-Tree Protocol Enhancements using Loop Guard

and BPDU Skew Detection Features

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An Essential Guide to Understanding and Implementing IP Routing Protocols

Infrastructure IP Routing on Cisco IOS, IOS XE, and IOS XR: An Essential Guide to Understanding and Implementing IP Routing Protocols

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Introduction to EIGRP

Infrastructure

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OSPF Design Guide

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Open Shortest Path First (OSPF)

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IP Routing: OSPF Configuration Guide, Cisco IOS Release 15M&T

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OSPF Database Explanation Guide

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IP Routing: BGP Configuration Guide, Cisco IOS Release 15M&T Chapter: BGP 4

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IP Routing: BGP Configuration Guide, Cisco IOS Release 15M&T

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Network Time Protocol: Best Practices White Paper

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Network Address Translation (NAT) FAQ

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IP Addressing: NAT Configuration Guide, Cisco IOS Release 15M&T

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First Hop Redundancy Protocols Configuration Guide, Cisco IOS Release 15M&T

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IP Multicast Technology Overview

Infrastructure

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Network Assurance

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Configuration Guide,Chapter: Troubleshooting and Fault Management

Network Assurance Basic System Management Configuration Guide, Cisco IOS Release 15M&T Chapter: Troubleshooting and Fault Management

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SNMP Configuration Guide, Cisco IOS Release 15M&T

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Software Configuration Guide, Chapter: Configuring SNMP

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Important Information on Debug Commands

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Using the Extended ping and Extended traceroute Commands

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Software Configuration Guide, Chapter: Configuring System Message Logging...

Network Assurance Catalyst 3750-X and 3560-X Software Configuration Guide, Release 15.0(1)SE Chapter: Configuring System Message Logging and Smart Logging

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Flexible Netflow Configuration Guide, Cisco IOS Release 15M&T

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Catalyst Switched Port Analyzer (SPAN) Configuration Example

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Software Configuration Guide, Chapter: Configuring SPAN and RSPAN

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IP SLAs Configuration Guide, Cisco IOS Release 15M&T

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Software Configuration Guide, Chapter: Configuring Cisco IOS IP SLAs Operations

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Cisco DNA Center Training Videos

Network Assurance

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Cisco DNA Center Platform Overview

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Model Driven Network Automation with IOS-XE

Network Assurance

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Introduction to XML

Software Development and Design

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Introduction to REST and APIs

Understanding and Using APIs

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More detailed breakdown of REST and APIs

Understanding and Using APIs

Resource

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Introduction to using Postman to make API calls

Understanding and Using APIs

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Security

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Configuring Secure Shell on Routers and Switches Running Cisco IOS

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Network Security Baseline Chapter: Infrastructure Device Access

Security

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User Security Configuration Guide, Cisco IOS Release 15MT

Security

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Secure Shell Configuration Guide, Cisco IOS Release 15M&T

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Software Configuration Guide, Chapter: Configuring Switch-Based Authentication

Security Catalyst 3750-X and 3560-X Software Configuration Guide, Release 15.0(1)SE Chapter: Configuring Switch-Based Authentication

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Software Configuration Guide, Chapter: Configuring Network Security with ACLs

Security Catalyst 3750-X and 3560-X Software Configuration Guide, Release 15.0(1)SE Chapter: Configuring Network Security with ACLs

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Security Configuration Guide: Access Control Lists, Cisco IOS Release 15M&T

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Software Configuration Guide, Chapter: Configuring IPv6 ACLs

Security Catalyst 3750-X and 3560-X Software Configuration Guide, Release 15.0(1)SE Chapter: Configuring IPv6 ACLs

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Control Plane Policing Implementation Best Practices

Security

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Security Dev Center

Security

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What Is Network Security?

Security

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What Is a Next-Generation Firewall?

Security

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Cisco Advanced Malware Protection Solution Overview

Security

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What Is Threat Prevention?

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Cisco TrustSec

Security

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Cisco TrustSec Design Guides

Security

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Automation

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Python Programming Training Videos

Automation

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Intro to Python Part 1

Software Development and Design

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Intro to Python Part 2

Software Development and Design

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Coding 202: Parsing JSON using Python

Software Development and Design

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Cisco DNA Center API Overview

Cisco Platforms and Development

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Introduction to Cisco DNA Center Northbound APIs

Cisco Platforms and Development

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Cisco DNA Center Northbound API Modules

Cisco Platforms and Development

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Advanced Cisco IOS Device Instrumentation - BRKNMS-3021

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NetDevOps Style Configuration Management for the Network - DEVNET-1616

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350-401 ENCOR v1.1 Exam Topics

Exam Description

To earn your CCNP Enterprise, CCIE Enterprise Infrastructure, or CCIE Enterprise Wireless certification, you must pass the **350-401 ENCOR** exam. This exam tests your knowledge of:

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Page 1

Implementing Cisco Enterprise Network Core Technologies v1.1 (350-401)

Exam Description: Implementing Cisco Enterprise Network Core Technologies v1.1 (ENCOR 350-401) is a 120-minute exam associated with the CCNP and CCIE Enterprise Certifications. This exam tests a candidate's knowledge of implementing core enterprise network technologies, including dual stack (IPv4 and IPv6) architecture, virtualization, infrastructure, network assurance, security, and automation. The course Implementing Cisco Enterprise Network Core Technologies helps candidates to prepare for this exam.

The following topics are general guidelines for the content likely to be included on the exam. However, other related topics may also appear on any specific delivery of the exam. To better reflect the contents of the exam and for clarity purposes, the guidelines below may change at any time without notice.

15%

1.0

Architecture

1.1

Explain the different design principles used in an enterprise network

1.1.a

High-level enterprise network design such as 2-tier, 3-tier, fabric, and cloud

1.1.b

High availability techniques such as redundancy, FHRP, and SSO

1.2

Describe wireless network design principles

1.2.a

Wireless deployment models (centralized, distributed, controller-less, controller-based, cloud, remote branch)

1.2.b

Location services in a WLAN design

1.2.c

Client density

1.3

Explain the working principles of the Cisco SD-WAN solution

1.3.a

SD-WAN control and data planes elements

1.3.b

Benefits and limitations of SD-WAN solutions

1.4

Explain the working principles of the Cisco SD-Access solution

1.4.a

SD-Access control and data planes elements

1.4.b Traditional campus interoperating with SD-Access

1.5

Interpret wired and wireless QoS configurations

1.5.a

QoS components

1.5.b QoS policy

1.6

Describe hardware and software switching mechanisms such as CEF, CAM, TCAM, FIB,

RIB, and adjacency tables

Page 2

10%

2.0

Virtualization

2.1

Describe device virtualization technologies

2.1.a

Hypervisor type 1 and 2

2.1.b Virtual machine

2.1.c

Virtual switching

2.2

Configure and verify data path virtualization technologies

2.2.a

VRF

2.2.b GRE and IPsec tunneling

2.3

Describe network virtualization concepts

2.3.a

LISP

2.3.b VXLAN

30%

3.0

Infrastructure

3.1

Layer 2

3.1.a

Troubleshoot static and dynamic 802.1q trunking protocols

3.1.b Troubleshoot static and dynamic EtherChannels

3.1.c

Configure and verify common Spanning Tree Protocols (RSTP, MST) and Spanning Tree enhancements such as root guard and BPDU guard

3.2

Layer 3

3.2.a

Compare routing concepts of EIGRP and OSPF (advanced distance vector vs. link

state, load balancing, path selection, path operations, metrics, and area types)

3.2.b Configure simple OSPFv2/v3 environments, including multiple normal areas,

summarization, and filtering (neighbor adjacency, point-to-point, and broadcast

network types, and passive-interface)

3.2.c

Configure and verify eBGP between directly connected neighbors (best path

selection algorithm and neighbor relationships)

3.2.d

Describe policy-based routing

3.3

Wireless

3.3.a

Describe Layer 1 concepts, such as RF power, RSSI, SNR, interference, noise,

bands, channels, and wireless client devices capabilities

3.3.b

Describe AP modes and antenna types

3.3.c

Describe access point discovery and join process (discovery algorithms, WLC selection process)

3.3.d

Describe the main principles and use cases for Layer 2 and Layer 3 roaming

3.3.e Troubleshoot WLAN configuration and wireless client connectivity issues using

GUI only

3.3.f

Describe wireless segmentation with groups, profiles, and tags

3.4

IP Services

3.4.a

Interpret network time protocol configurations such as NTP and PTP

3.4.b Configure NAT/PAT

3.4.c

Configure first hop redundancy protocols, such as HSRP, VRRP

3.4.d

Describe multicast protocols, such as RPF check, PIM and IGMP v2/v3 2023
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Page 3

10%

4.0

Network Assurance

4.1

Diagnose network problems using tools such as debugs, conditional debugs, traceroute, ping, SNMP, and syslog

4.2

Configure and verify Flexible NetFlow

4.3

Configure SPAN/RSPAN/ERSPAN

4.4

Configure and verify IPSLA

4.5

Describe Cisco DNA Center workflows to apply network configuration, monitoring, and management

4.6

Configure and verify NETCONF and RESTCONF

20%

5.0

Security

5.1

Configure and verify device access control

5.1.a

Lines and local user authentication

5.1.b Authentication and authorization using AAA

5.2

Configure and verify infrastructure security features

5.2.a

ACLs

5.2.b CoPP

5.3

Describe REST API security

5.4

Configure and verify wireless security features

5.4.a

802.1X

5.4.b WebAuth

5.4.c

PSK

5.4.d

EAPOL (4-way handshake)

5.5

Describe the components of network security design

5.5.a

Threat defense

5.5.b

Endpoint security

5.5.c

Next-generation firewall

5.5.d TrustSec and MACsec

5.5.e

Network access control with 802.1X, MAB, and WebAuth

15%

6.0

Automation

6.1

Interpret basic Python components and scripts

6.2

Construct valid JSON-encoded files

6.3

Describe the high-level principles and benefits of a data modeling language, such as

YANG

6.4

Describe APIs for Cisco DNA Center and vManage

6.5

Interpret REST API response codes and results in payload using Cisco DNA Center and

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Page 4

6.6

Construct an EEM applet to automate configuration, troubleshooting, or data collection

6.7

Compare agent vs. agentless orchestration tools, such as Chef, Puppet, Ansible, and SaltStack



Architecture



Virtualization



Infrastructure



Network Assurance



Security



Automation

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- - o 1.1 Explain the different design principles used in an enterprise network
 - 1.1.a High-level enterprise network design such as 2-tier, 3-tier, fabric, and cloud
 - 1.1.b High availability techniques such as redundancy, FHRP, and SSO
 - o 1.2 Describe wireless network design principles
 - 1.2.a Wireless deployment models (centralized, distributed, controller-less, controller-based, cloud, remote branch)
 - 1.2.b Location services in a WLAN design
 - 1.2.c Client density
 - o 1.3 Explain the working principles of the Cisco SD-WAN solution
 - 1.3.a SD-WAN control and data planes elements
 - 1.3.b Benefits and limitations of SD-WAN solutions
 - o 1.4 Explain the working principles of the Cisco SD-Access solution
 - 1.4.a SD-Access control and data planes elements
 - 1.4.b Traditional campus interoperating with SD-Access
 - o 1.5 Interpret wired and wireless QoS configurations
 - 1.5.a QoS components
 - 1.5.b QoS policy
 - o 1.6 Describe hardware and software switching mechanisms such as CEF, CAM, TCAM, FIB, RIB, and adjacency tables

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- - o 2.1 Describe device virtualization technologies
 - 2.1.a Hypervisor type 1 and 2
 - 2.1.b Virtual machine
 - 2.1.c Virtual switching
 - o 2.2 Configure and verify data path virtualization technologies
 - 2.2.a VRF
 - 2.2.b GRE and IPsec tunneling
 - o 2.3 Describe network virtualization concepts
 - 2.3.a LISP
 - 2.3.b VXLAN

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- o 3.1 Layer 2
 - 3.1.a Troubleshoot static and dynamic 802.1q trunking protocols
 - 3.1.b Troubleshoot static and dynamic EtherChannels
 - 3.1.c Configure and verify common Spanning Tree Protocols (RSTP, MST) and Spanning Tree enhancements such as root guard and BPDU guard
- o 3.2 Layer 3
 - 3.2.a Compare routing concepts of EIGRP and OSPF (advanced distance vector vs. link state, load balancing, path selection, path operations, metrics, and area types)
 - 3.2.b Configure simple OSPFv2/v3 environments, including multiple normal areas, summarization, and filtering (neighbor adjacency, point-to-point, and broadcast network types, and passive-interface)
 - 3.2.c Configure and verify eBGP between directly connected neighbors (best path selection algorithm and neighbor relationships)
 - 3.2.d Describe policy-based routing
- o 3.3 Wireless
 - 3.3.a Describe Layer 1 concepts, such as RF power, RSSI, SNR, interference, noise, bands, channels, and wireless client devices capabilities
 - 3.3.b Describe AP modes and antenna types
 - 3.3.c Describe access point discovery and join process (discovery algorithms, WLC selection process)
 - 3.3.d Describe the main principles and use cases for Layer 2 and Layer 3 roaming
 - 3.3.e Troubleshoot WLAN configuration and wireless client connectivity issues using GUI only
 - 3.3.f Describe wireless segmentation with groups, profiles, and tags
- o 3.4 IP Services
 - 3.4.a Interpret network time protocol configurations such as NTP and PTP
 - 3.4.b Configure NAT/PAT
 - 3.4.c Configure first hop redundancy protocols, such as HSRP, VRRP
 - 3.4.d Describe multicast protocols, such as RPF check, PIM and IGMP v2/v3
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- o 4.1 Diagnose network problems using tools such as debugs, conditional debugs, traceroute, ping, SNMP, and syslog

- o 4.2 Configure and verify Flexible NetFlow
- o 4.3 Configure SPAN/RSPAN/ERSPAN
- o 4.4 Configure and verify IPSLA
- o 4.5 Describe Cisco DNA Center workflows to apply network configuration, monitoring, and management
- o 4.6 Configure and verify NETCONF and RESTCONF

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- o 5.1 Configure and verify device access control
 - 5.1.a Lines and local user authentication
 - 5.1.b Authentication and authorization using AAA
- o 5.2 Configure and verify infrastructure security features
 - 5.2.a ACLs
 - 5.2.b CoPP
- o 5.3 Describe REST API security
- o 5.4 Configure and verify wireless security features
 - 5.4.a 802.1X
 - 5.4.b WebAuth
 - 5.4.c PSK
 - 5.4.d EAPOL (4-way handshake)
- o 5.5 Describe the components of network security design
 - 5.5.a Threat defense
 - 5.5.b Endpoint security
 - 5.5.c Next-generation firewall
 - 5.5.d TrustSec and MACsec
 - 5.5.e Network access control with 802.1X, MAB, and WebAuth

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- o 6.1 Interpret basic Python components and scripts
- o 6.2 Construct valid JSON-encoded files
- o 6.3 Describe the high-level principles and benefits of a data modeling language, such as YANG
- o 6.4 Describe APIs for Cisco DNA Center and vManage
- o 6.5 Interpret REST API response codes and results in payload using Cisco DNA Center and RESTCONF
- o 6.6 Construct an EEM applet to automate configuration, troubleshooting, or data collection
- o 6.7 Compare agent vs. agentless orchestration tools, such as Chef, Puppet, Ansible, and SaltStack

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On Thu, Feb 27, 2025 at 10:43 AM tshingombe fiston

<tshingombefiston@gmail.com> wrote:

Introduction to Cybersecurity and Screen Readers

The Introduction to Cybersecurity course is compatible with JAWS and NVDA screen readers.

When you launch a module, you will be taken to the navigation bar at the top of the screen. Press

Down to navigate through the content.

This table outlines how the different presentation components in the course interact with screen readers.

Accordion

Selecting each title heading reveals additional text and an optional image.

A screen reader will advise that the title heading is a clickable button and will read the title heading.

Press the spacebar or Enter key to expand the heading.

Press the Down arrow to continue to the main body of the text. You will be advised once all text has been read.

Press the Down arrow to move to the next title heading and press the spacebar or Enter key as above.

If there is an image, the alt text will be read out.

Flipcard

Selecting each image reveals information on the back.

A screen reader will read out the alt text for the first flipcard image.

Press the Enter key or the spacebar to flip the card.

The screen reader will read the flipcard title.

Press the Down arrow to read through the main body of the text.

Once all of the text has been read, press the Down arrow to move to the next flipcard.

Graphic

A visual representation of content.

A screen reader will read out the alt text for the image.

Hotgraphic

Selecting the clickable pins on a large image reveals text and an image in a pop-up.

A screen reader will read the alt text for the main image.

Press the Down arrow to move to the first pin.

Press the Enter key or spacebar to open the pop-up. The screen reader will read the pop-up title.

Press the Down arrow to read through the text in the pop-up.

Press the Down arrow again to read the alt text of the image in the pop-up.

Press the Down arrow again to access the next button, discover how many pins are in the main hotgraphic component, and then the close button.

Repeat this process to access the information in the next pin.

Media

Select the play button to watch video or listen to audio content.

Use the Up and Down keys to navigate through the media player controls.

Press the Enter key to activate a button.

Narrative

Select the arrows to reveal a series of side scrolling images and accompanying text.

A screen reader will read the title of the first narrative item, followed by the alt text for the narrative item image and then the body text for the item.

Press the Down arrow to move to the next narrative item. The screen reader will tell you the number of the narrative item you are on out of the total number of narrative items.

Press the Enter key to read the next narrative item as above.

Text
A basic presentation component. Press the Down arrow to navigate through the text on screen.

Open text input

Enter free form text into the space provided.

Type in your response and press the Down key to move to the Submit button.

Press the Enter key to submit your response. This table outlines how the different question components in the course interact with screen readers.

Fill in the blanks

Select the correct answer from a dropdown list.

Press the Down arrow to read out the body of text and the missing word options.

Press the Down arrow again to move to the dropdown box.

Press the Enter key to open the dropdown box and use the Up and Down arrows to navigate through the answer options.

Press Enter to make a selection.

Press Enter again to submit your answer.

Graphical Multiple Choice Question

Select the correct answer from the graphical options presented.

Press the Down arrow to go to the first image. The screen reader will read the alt text for the image, then the answer text (if applicable).

Press the Up and Down arrows to navigate through each of the images.

Press the Enter key to make your selection.

Press the Down arrow to move to the Submit button and press the Enter key to submit your answer. **Matching Question**

Select the correct answers for each question stem from a dropdown list.

Press the Down arrow to move to the first question stem. A screen reader will read out the text.

Press the Down arrow to move to the dropdown box and press the Enter key to open.

Press the Up and Down arrows to work through the possible answer options and press the Enter key to select your answer.

Press the Down arrow to move to the next question and repeat this process.

When you have selected an answer for each questions stem, press the Down arrow to move to the Submit button.

Press the Enter key to submit your responses.

Multiple Choice Question

Select the correct answer(s) to a question from a list.

Press the Up and Down arrows to move through each of the possible answers.

Press the Enter key to select your answer(s).

Press the Down arrow to move to the Submit button.

Press the Enter key to submit your response(s). **Slider**

Position a slider on a scale.

Press the Down arrow to move to the start of the scale. The screen reader will read this value.

Press the Down arrow again to move to the end of the scale. A screen reader will read this value.

Press the Down arrow to move to the sliding scale and press the Enter key to make your selection.

Press the Down arrow to move to the Submit button and press the Enter key to submit your response.

Stacker

Place the options in the correct order.

Press the Down arrow to move to the first option on the list. A screen reader will read out the text.

Press the Enter key to open the selection number and press the Up and Down arrow to choose what numbered position you wish to place this option in.

Repeat this process for each of the options on the list.

Press the Down arrow to move to the Submit button and press the Enter key to submit your response. **Yes/No**

Place the answer options into two categories.

Press the Down arrow to read out the instruction text.

Select the Down arrow again to move to the Start button. Press the Enter key or spacebar to begin this activity.

The screen reader will read out any alt text for the first item.

Press the Down arrow to move to the two category buttons.

Press the Enter key to make your selection.

The next item will then load.

Repeat the process as above.

Once you reach the last item, the question will automatically submit, and question feedback will appear. Close the feedback box and use the Up and Down arrows to go through each item for any specific feedback.

On Thu, Feb 27, 2025 at 10:39 AM tshingombe fiston

<tshingombefiston@gmail.com> wrote:

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Lab - Who Owns Your Data?

Objectives

Explore the ownership of your data when that data is not stored in a local system.

Part 1: Explore the Terms of Service Policy

Part 2: Do You Know What You Signed Up For?

Background / Scenario

Social media and online storage have become an integral part of many people's lives. Files, photos, and videos are shared between friends and family. Online collaboration and meetings are conducted in the workplace with people who are many miles from each other. The storage of data is no longer limited to just the devices you access locally. The geographical location of storage devices is no longer a limiting factor for storing or backing up data at remote locations. In this lab, you will explore legal agreements required to use various online services. You will also explore some of the ways you can protect your data.

Required Resources

☐☐PC or mobile device with Internet access

Part 1: Explore the Terms of Service Policy

If you are using online services to store data or communicate with your friends or family, you probably entered into an agreement with the provider. The Terms of Service, also known as Terms of Use or Terms and Conditions, is a legally binding contract that governs the rules of the relationship between you, your provider, and others who use the service.

Navigate to the website of an online service that you use and search for the Terms of Service agreement.

Below is a list of many popular social media and online storage services.

Social Media

Facebook: <https://www.facebook.com/policies>

Instagram: <http://instagram.com/legal/terms/>

Twitter:

<https://twitter.com/tos>

Pinterest: <https://about.pinterest.com/en/terms-service>

Online Storage

iCloud:

<https://www.apple.com/legal/internet-services/icloud/en/terms.html>

Dropbox: <https://www.dropbox.com/terms2014>

OneDrive: <http://windows.microsoft.com/en-us/windows/microsoft-services-agreement>

Review the terms and answer the following questions.

a. Do you have an account with an online service provider? If so, have you read the Terms of Service

agreement?**Lab - Who Owns Your Data?**

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b. What is the data use policy?

c. What are the privacy settings?

d. What is the security policy?

e. What are your rights regarding your data? Can you request a copy of your data?

f. What can the provider do with the data you upload?

g. What happens to your data when you close your account?

Part 2: Do You Know What You Signed Up For?

After you have created an account and agreed to the Terms of Service, do you really know what you have signed up for?

In Part 2, you will explore how the Terms of Service can be interpreted and used by providers.

Use the Internet to search for information regarding how the Terms of Service are interpreted.

Below are a few sample articles to get you started.

Facebook:

<http://www.telegraph.co.uk/technology/social-media/9780565/Facebook-terms-and-conditions-why-you-dont-own-your-online-life.html>

iCloud:

http://www.americanbar.org/publications/law_practice_today_home/law_practice_today_archive/april12/have-attorneys-read-the-icloud-terms-and-conditions.html

Dropbox:

<http://www.legalgenealogist.com/blog/2014/02/24/terms-of-use-change-dropbox/>

Review the articles and answer the following questions.

a. What can you do to protect yourself? **Lab - Who Owns Your Data?**

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b. What can you do to safeguard your account and protect your data?

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Stephen Bigelow, Senior Technology Editor

Cloud deployments and SaaS offerings have moved many workload
deployments out of

the data center. However, the local data center still hosts workloads and
data that can

be legally restricted, too important, too sensitive or otherwise impractical
to trust with

outside vendors. That means a lot rides on successful data center
upgrades.

Upgrades remain the primary means of advancing the data center's IT
capabilities.

They build resilience, boost performance, lower operating costs, enhance
security and

rein in downtime by replacing aging or underperforming IT assets.

But upgrades always carry an element of risk: Oversights and mistakes
can lead to

unexpected downtime, issues with workload availability, performance
disruptions and

unacceptable management or [security gaps](#). It's important to nail
upgrades

successfully the first time through or, at least, have the capacity to fall
back effectively

if things go wrong.

The key to smooth, successful and meaningful data center upgrades is
preparation.

Know the goals and the path to each goal, and meet the roadblocks along

the way to
bring huge benefits to the upgrade process. Page 2 of 12

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1. Understand your business needs

Some of the costliest and riskiest mistakes occur when business leaders opt for

unnecessary technology investments or when they lack clear criteria for [ROI](#). Upgrades

shouldn't serve as a showcase for new technologies but should help the business

operate more efficiently and competitively. They should focus on the following:

- expanding vital resources, such as storage or compute;
- enabling new workloads for more, new or updated applications;
- supporting additional employees, users or transactions;
- lowering the cost per user or transaction; and
- building IT capabilities, such as workload resilience, business continuity and disaster recovery.

For example, a server upgrade might support consolidating multiple workloads onto

one system, reducing costs such as power, space and system maintenance. Adding

storage to the infrastructure can be as simple as adding new disks to the existing

storage server. Include a [redundant, load-balanced server](#) to enhance the availability of

critical workloads. Page 3 of 12

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2. Identify the upgrade targets

With business needs clearly defined, determine the scope of the upgrade project, and

identify the hardware, software, services, policies, processes and workflows affected

by the upgrade.

Upgrades are never an all-or-nothing decision. Upgrade scope can be incredibly narrow and specific, so clearly determine the scope in advance to prevent potentially disastrous oversights, such as unanticipated hardware or software version incompatibility.

Consider an aging legacy workload and workload-dependent hardware.

You could

rework the vital workload into an updated software product, deploy that updated

software on capable new server hardware and retire the aging hardware.

In this case,

the principal upgrade targets would involve both the legacy server and its legacy

application.

Also, consider the secondary scope, such as [dependencies](#). For example, if that aging

application relies on an older database, must you upgrade that database and its

hardware as well? Practices such as application or systems management are

considered dependencies, and you should include them in the scope. Page 4 of 12

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3. Create the upgrade roadmap

An upgrade project or goal usually involves multiple discrete upgrade tasks. For

example, an upgrade might involve adding two racks of servers to the infrastructure,

but that might also require the addition of power and cooling capacity upgrades or

enhancements to WAN access.

Even something simple like a server upgrade can involve supporting work. For

example, to add a 2U server to a full rack, you might need to relocate one or more

other servers first to make space. Such considerations can seem like minutiae, but

overlooking even small details can delay an upgrade.

Examine the intended goal and its dependencies, and target the

dependencies first.

This might be a matter of simply relocating hardware to make [appropriate rack space](#)

or upgrading supporting platforms -- such as a database and its server -- before rolling

out the intended upgrade.

4. Identify the upgrade technologies

Identifying new products for an upgrade might be as simple as selecting new disks for a

storage upgrade or choosing the make, model and loadout for new servers. Larger

upgrades demand more consideration. For example, if it's time to update a group of

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related servers, evaluate the potential of advanced technology platforms, such as

[hyper-converged infrastructure](#).

Going into an upgrade with unfamiliar hardware and software is a recipe for disaster,

so test products before committing to them when possible. Use hands-on evaluations

and proof-of-principle projects to validate new hardware and software products and

learn their deployment, setup, configuration and interoperability considerations.

5. Clean up or enhance existing infrastructure

Everything in the data center has a lifecycle, and aging infrastructure can pose an

impediment to the business. As you review infrastructure to determine the scope and

requirements for an upgrade, take additional time to consider tasks or projects that

might not directly impact the intended upgrade, but can still benefit the business and

infrastructure in a broader sense, including the following:

- adding redundancy to a critical application;
- removing redundancy from applications that no longer need it;
- updating aging cabling to facilitate greater network bandwidth;
- updating power distribution and power backup, such as power distribution

units and [uninterruptible power supply subsystems](#);Page 6 of 12

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- repositioning racks and closing open hardware gaps to [enhance cooling airflow](#);

and

- reviewing system management tools and capabilities.

Such tangential or secondary upgrades can enhance the data center's performance, reliability and efficiency.

6. Prepare documentation

Most data center hardware and software require an [assortment of details](#) for

deployment. Details include default network addressing, licensing data such as

activation codes, and detailed instruction for setup and configuration, such as product

manuals and user guides.

Organize this data, and ensure the availability of everything before launching an

upgrade task. Otherwise, the business risks unacceptable delays and unwanted

cancellations because of missing details. For example, a new software product might

require a license number or activation code. IT staff don't want to scramble for this

information when performing an upgrade at 2 a.m. when the vendor's sales and

support staff might not be available for a prompt response.Page 7 of 12

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7. Back up and be ready to restore

Today's [virtualized data center environments](#) make it relatively easy to move

workloads to other servers, which enables you to replace and configure an emptied

server. At the same time, you can replicate workloads running inside VMs

using copy or snapshot technologies. Still, mistakes and unintended consequences happen, and even seemingly straightforward upgrades can go sideways in a hurry. Before and during an upgrade, prepare for the worst with simple guidelines, such as the following:

- performing a complete backup of any server applications or storage systems involved in an upgrade process;
- testing the restoration process and ensuring that the restoration works;
- ensuring that all IT staff involved in the upgrade task can execute a restoration or rollback successfully;
- documenting the current configuration of existing hardware and software -- even if you plan to retire those products -- so that you can restore them to a known-working state if necessary;
- and documenting all changes that take place during the upgrade -- such as [changing an IP address](#) or moving a VM to a different physical server -- and ensuring those changes are reflected in systems or change management tools.

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8. Keep stakeholders informed

Upgrades can disrupt regular business and keep important workloads unavailable for prolonged periods. This affects employees, business partners, customers and business leaders alike. Data center upgrades should always loop stakeholders into the process.

An upgrade project usually involves numerous tasks. So, treat each task

individually,
and communicate that to stakeholders. Common communication includes the following:

- telling stakeholders what upgrades are planned, why the work is necessary, what changes or new capabilities should be available and when the work takes place;
- reminding stakeholders about upgrade schedules -- usually including several reminders leading up to the actual upgrade task;
- sending an update to stakeholders if you encounter problems or delays; and
- sending an all-clear to stakeholders once the upgrade task is complete and normal functionality resumes.

Also, provide accurate contact information for [support or help desk access](#) if problems

arise. For example, if a software upgrade comes with new features and functions, train

the support personnel on those changes in advance so that they can effectively

address user questions and problems.

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9. Validate the deployment

Once you complete the upgrade task, test and validate that the hardware or software

deployment works properly. For example, a new server should run well and have

secure configuration. When you reinstall or migrate workloads back to the server,

those workloads should become accessible across the local data center network. At

this stage, IT staff must benchmark and measure performance, troubleshoot and

remediate upgrade problems, or execute a rollback if needed. Only once you know

everything works as intended should you open the resources for general use across the

business LAN or internet.

Upgrades can disrupt systems or application management tools. Capture any changes

involved in an upgrade task in all data center systems and security management tools,

or prepare to enter changes manually using the documentation you collect. Some

management platforms require additional installation of agents or drivers before the

management tool can oversee new assets properly.

10. Roll out a deployment systematically if necessary

Roll out upgrade projects that involve high levels of uncertainty or risk in stages. For

example, updating a mission-critical legacy application and its associated hardware

involves deploying new assets simultaneously -- in parallel with current assets -- and Page 11 of 12

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opening segments of the environment for [beta testing](#), rather than simply replacing

the application and hardware in an upgrade. This minimizes the impact of unforeseen

problems after the upgrade goes live because the original hardware and software

remain available and operational.

If the new assets operate as intended, you can systemically migrate additional user

groups to the new assets. When you have migrated all users successfully and

thoroughly proven the new assets, you can then retire and remove any old assets as a

smaller cleanup upgrade task.

11. Consider data center standards

There are no established requirements for data center design, implementation,

performance or availability. However, governments, stakeholders, partners and

customers have come to expect a level of [adherence to certain standards](#).

Upgrade

projects are an excellent opportunity to examine data center standards and consider the value of adopting an existing standard. Numerous code and best practice standards can validate your data center, including Uptime Institute, Telecommunications Industry Association 942, American National Standards Institute/BICSI 002-2014, EN 50600 and a range of optional standards, such as Leadership in Energy and Environmental Design, Green Globes and Energy Star. Understand the role of each standard, evaluate its importance or benefit to your business and plan to implement desired standards as part of ongoing data center upgrade projects.

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As a CW+ member, you have access to TechTarget's entire portfolio of 80+ websites. CW+ access directs you to previously unavailable "platinum members-only resources" that are guaranteed to save you the time and effort of having to track such premium content down on your own, ultimately helping you to solve your toughest IT challenges more effectively—and faster—than ever before.

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OpenEDG Python Institute Certifications

The Python Institute is committed to the development of an objective **framework for skills assessment and competency validation** and building an independent **global standard in Python programming certification**, which will allow programming specialists, software

developers, and IT professionals from all over the world to assess and document their programming skills objectively, and to gain recognition for their expertise.

Open Education and Development Group (OpenEDG) together with [Cisco Networking Academy](#) – the leading global education program, and [Pearson VUE](#) – the leader in computer-based testing, have established collaboration for the delivery of learning and certification programs created for the Python programming language.

On the foundations of this cooperation, the OpenEDG Python Institute, Cisco Networking Academy, and Pearson VUE provide the **leading Python programming curriculums** and **high-stakes, globally available, and industry-recognized Python programming testing and certification programs**.

The Python Institute is committed to providing the IT community as well as the education and industry sectors with test and certification programs of the highest quality. We are proud to offer professional certifications designed to provide industry recognition of knowledge, skills and proficiency in Python programming.



Andrew Smith

Senior Lecturer, The Open University, UK

At the OU, we have seen how the employability of OpenEDG's Python certification has underpinned the popularity of our linked Microcredential, it is the value that PCAP and PCEP offer that makes the difference.

Exam and Certification Development Standards

The OpenEDG Python Institute certification program was designed

following a **rigorous process of industry and market research** to accurately determine the demand for specialized professionals in the given sectors: through **Job Task Analyses** (JTAs), **Training Needs Analyses** (TNAs), and **Skills Gap Analyses** (SGAs) aiming to identify the work requirements and skills sought by employers looking to hire Python programmers; and an intensive **examination of the education system** that lays out the foundation for the training and development of IT specialists, web developers, managers, and aspiring programmers.

Open Education and Development Group (OpenEDG), in its certification development process, adopts a **meticulous, consultation-driven, and competency-oriented approach to test design**, utilizing qualitative development frameworks, subject-centered design patterns, and psychometric modelling conducted in alignment with the prescriptive guidance for educational and psychological assessment practices put forth in the **Standards for Educational and Psychological Testing** (AERA, APA, NCME), **European Test User Standards** (EFPA, EAWOP), and the **European Test Review Model** (EFPA, EAWOP).

Python Institute

General-Purpose Programming Track

Jane Doe

has successfully completed the requirements to be recognized as

PCAP™ – Certified Associate Python Programmer

[PCAP-31-04]



Christopher Boguslawski

Christopher Boguslawski
President, Python Institute

Lab - Use Excel to Forecast

Objectives

Part 1: Input the Data

Part 2: Execute a Data Forecast

Background / Scenario

Forecasting is a way of predicting values in the future based on data. Managers want data instantly to make decisions and they rely on techniques such as forecasting to make those decisions. With big data, volumes of data are produced instantaneously. This presents a challenge to collect and process this data in real time.

This lab is very basic and is designed to show you how forecasting is performed in Microsoft Excel. You will be inputting a set of weekly grades and using the forecast feature to see what grades are predicted for the next few weeks.

Required Resources

Microsoft Excel with the Analysis ToolPak option installed or ability to enable as an Add-In

Instructions

Part 1: Input the Data

Step 1: Enable Analysis ToolPak Add-in.

- ☐ a. Open a blank Excel spreadsheet.
- ☐ b. Click **File** and click **Options**.
- ☐ c. Click **Add-ins**. At the bottom of the page, select **Excel Add-ins** in the **Manage** drop down if necessary and click **Go**.
- ☐ d. In the **Add-ins** window, select **Analysis ToolPak** and **Solver Add-in** and click **OK** to continue.

Step 2: Input grades and dates into specific Microsoft Excel cells.

- ☐ a. In cell A1, enter **Date**.
- ☐ b. In cell B1, enter **Grade**.
- ☐ c. In cell C1, enter **Forecast**.

- d. In cell D1, enter **Lower Confidence Boundary**.
- e. In cell E1, enter **Upper Confidence Boundary**.
- f. Starting with the A2 cell, type the following dates in the A2 through A15 cells:

1/8/2018, 1/15/2018, 1/22/2018, 1/29/2018, 2/5/2018, 2/12/2018,
2/19/2018, 2/26/2018, 3/5/2018, 3/12/2018, 3/19/2018, 3/26/2018,
4/2/2018, 4/9/2018

Note: The date format may be different in your region. In the example, it is using mm/dd/yyyy for the date format.

Note: If you get pound signs (###) in your cell, click, hold down, and drag the line to the right of the dates to make the A column wider or you can right-click the A that is above the word Date, select **Column width**, type **10**, and click **OK**.

- g. Starting with the B2 cell, type the following grades in the B2 through B11 cells:
100, 90, 75, 80, 50, 95, 85, 100, 80, 75

Part 2: Execute a Data Forecast

In this part, you will use Excel to forecast what your grades will be for the remaining weeks. Remember that this forecast is based on the grades you have already achieved and have entered into the spreadsheet.

Step 1: Use the Forecast Sheet Function.

- a. Highlight cells A2 to A15.
- b. In the **Data** tab, click **Text to Columns** launch the **Text to Columns Wizard**.
- c. In Step 1 of 3, leave the default choice as **Delimited** and click **Next**.
- d. In Step 2 of 3, leave the default choice as **Tab** and click **Next**.
- e. In Step 3 of 3, select **Date** and change the field in the dropdown box to MDY (Month/Date/Year). Click **Finish**.
- f. Select cells A1 through B11.
- g. In the **Data** tab, select **Forecast Sheet** to open the **Create Forecast Worksheet** window.
- h. In the **Forecast End** calendar window, select **4/9/2018** as the end date.
- i. Expand **Options**. Notice that you can adjust the confidence interval. The confidence interval is the upper and lower limits of what Excel predicts you will score in the next few weeks.

- j. Click **Create** to create the graph and generate forecast data in a new sheet. The generated graph should be similar to what is shown below. Note that the graph can be moved if it is covering up any data cells.
- k. Notice that Excel predicts that you will make 80.39 on March 19th but is 95% confident that it really will be a score somewhere between 47.54 and 113.23.

What score is predicted for April 2nd?



Show Answer

Within what range of scores is Excel 95% confident that you will make on April 9th?



Show Answer

- l. If you like using a formula instead of the using the menu, you can input a formula and get the same numbers in the original sheet.
In C12 enter the following formula:
`=FORECAST.ETS(A12,$B$2:$B$11,$A$2:$A$11,1,1)`
In D12, enter the following formula:
`=C12-FORECAST.ETS.CONFINT(A12,$B$2:$B$11,$A$2:$A$11,0.95,1,1)`
In E12, enter the following formula:
`=C12+FORECAST.ETS.CONFINT(A12,$B$2:$B$11,$A$2:$A$11,0.95,1,1)`

Step 2: Modify the data.

- a. Change the data to grades that are more reflective of your own grades.
- b. Highlight the data sets in cells A1 and B1 up to A11 and B11.
- c. In the **Data** tab, select **Forecast Sheet** to open the **Create Forecast Worksheet** window.

- d. Expand the **Options** and adjust the confidence interval from 95% to 98%.

How did changing the confidence level from 95% to 98% affect the forecast range of grades?

Show Answer

List three examples of where you think forecasting would be used in big data.

Show Answer

Show All AnswersClear My Responses

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Update about your Open Data Day 2025 Mini-Grant proposal

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<lucas.pretti@okfn.org>

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to opendataday,
bcc: me

Hello,

Thank you for submitting a proposal for an Open Data Day 2025 mini-grant.

We regret to inform you that your proposal has not been selected this time. The selection process has been particularly long and difficult this year due to the high quality of the 130 proposals received from all around the globe, so, although your proposal has not been selected, we would like to congratulate you and thank you for sharing your event with us.

[Open Data Day](#) is a community-organised event. The mini-grants help promote just a few of the hundreds of independent events that take place

every year. We encourage you to go ahead with your proposal and realise it in any way you can. The important thing is to get together with your community and celebrate the power of open data to tackle the polycrisis.

We would also like to invite you to participate next year. If you're not yet part of the community, you can also join the [Open Data Day Google Group](#) and/or the [Open Data Day Slack channel](#) to ask for advice, share tips, and get connected with others.

In addition, we'd like to share with you the [Press Kit](#) we've prepared to help promote your event. It contains resources such as logos, badges and pre-scripted texts that you just need to translate and adapt.

The official ODD25 hashtags are #OpenDataDay #ODD25 #BetterTogetherThanAlone.

Please feel free to reach out to us if you have any questions or need further clarification.

Yours sincerely,

--

Lucas Pretti

Communications, Institutional Relations and Advocacy Director

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3

© 2024 Cascade Insights all rights reservedKey Findings

Key statistics

- 85% of consumers feel neutral to positive about the use of AI to enhance their shopping experiences.
- More than half of consumers are comfortable sharing their shopping data to improve shopping experiences.
- Consumers want assurances of data protection and intent, with 36% of them leaving retailers where they were concerned about how their personal data was being used.
- On average, 43% of retailers are focusing on operational initiatives that optimize workflows and improve customer experiences.

Summary:

Consumers have become comfortable with the data collection and usage practices in retail. Past experiences have shown them that data-driven AI technologies can make their shopping interactions more efficient, easier, and enjoyable.

However, some retailers aren't taking full advantage of this opportunity. Instead, they are focusing on initiatives where collecting customer data isn't necessary.

Those who are taking full advantage are experiencing success amidst complicated and costly implementations.

The detailed exploration of three key customer focused AI initiatives—AI Virtual Shopping Assistants, AI-Driven Personalization, and AI Powered Marketing Optimization—demonstrates how leading retailers are leveraging AI to drive efficiencies and elevate the shopping experience.

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When asked about features they had interacted with, consumers highlighted delivery tracking, personalized email ads, and contactless delivery or checkout. Notably, only 10% reported having no interaction with any of the shopping experiences included in the survey.

Top used shopping features include:

66%

Delivery

Tracking

45%

Email Ads

31%

Contactless

delivery or

checkout

Consumers think AI shopping experiences make their transactions:

42%

53%

56%

More enjoyable

Easier

More efficient

of consumers reported feeling neutral about the use of AI to enhance their shopping experiences, while 36% expressed being happy or very happy with it.

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Consumers are willing to trade their shopping data for better shopping experiences.

Consumer attitudes toward data sharing have evolved, with many customers becoming more comfortable allowing retailers to use their data for personalized targeting.

- Nearly **75%** of consumers are willing to share valuable data, such as preferences and loyalty program information.
- **41%** of consumers are even comfortable sharing health-related data.
- However, discomfort remains around sharing social media data (**49%**) and technical** data (**54%**).

Despite these reservations, the data consumers are willing to share provides ample opportunity for retailers to deliver more personalized and enhanced shopping experiences.

*Note: To simplify the graph, "comfortable" responses include both "comfortable"

and "very comfortable" percentages, while "not comfortable" responses combine

"uncomfortable" and "very uncomfortable" percentages.

**Technical data is defined as Device type, IP address, geolocation, app usage.

72% 71%

63% 62% 61% 60% 59%

54% 51%

47% 45%

41%

49%

54%

Comfortable

Neutral

Not comfortable

27%

Virtual

Try On

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Top shopping frustrations & wanted experiences:

27%
Faster Checkout
(online &
In-store)

23%
Streamlined
Returns &
Exchanges

23%
Price
Comparison
Tool

36%
Tailored Discounts
& Personalized
Promotions

%

27%

Early Access to

Products &

Promotions

Most Wanted Shopping Experiences

Experiences that Most Increase Loyalty

Frustrations⁸

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Retailers are juggling solving their own pain points with improving customer experience.

While customer experience remains a top priority in the retail industry, many retail operations leaders are seeking ways to address two needs with one solution. They're implementing AI technologies that can enhance customer experiences while optimizing back-end processes, addressing labor shortages, and increasing margins.

This often involves improvements to shopping experiences that go unnoticed by customers. For example, AI-driven inventory management ensures top-selling items remain in stock and are positioned for efficient shipping.

However, some AI initiatives, such as chatbots, aim to improve customer experience, by shortening wait times, and solve retailer challenges, by mitigating labor shortages, but can inadvertently lead to customer dissatisfaction.

"Virtual customer service agents are horrible. They never understand what you are actually asking and getting to a live person is too difficult."

32%

33%

38%

42%

43%

43%

AI-augmented delivery services

Optimized marketing (for segmentation and personalization)

Personalized recommendations

AI-powered personalized shopper

Customer service chatbots

AI-enabled inventory management

Top AI Initiatives Retailers Are Implementing

9

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Retail leaders may also be targeting operational initiatives because these efforts typically require little to no customer data.

Focusing on operational initiatives helps retailers avoid the cybersecurity risks, the responsibility of protecting sensitive customer information, and the complexities of complying with data regulations that come with consumer-data initiatives.

It also mitigates the high costs associated with storing, analyzing, and leveraging customer data to deliver personalized shopping experiences.

Obviously when it comes to AI, there's still a lot of questions around, Is it safe from a cybersecurity standpoint? Are we touching customer data? How well is it controlled?"

-SVP Operations, Convenience Stores

With **43% of retailers implementing AI virtual assistants**, **38% focusing on personalized shopping experiences**, and **33% optimizing personalized marketing efforts**,

personalization is no longer optional—it's an expectation. As long as retailers provide transparency and reassurances on data collection and usage, consumers will continue to demand tailored, data-driven experiences.

28%

31%

36%

41%

Clear
explanation of
what personal
information is
being
collected

Following
privacy laws
that protect
personal data

Promise that
personal data
won't be sold
to other
companies

Strong
protection of
personal
information
from hackers

Top Reassurances on Data
Protection & Usage
of consumers reported
they stopped shopping at
a retailer due to concerns
about how their personal
data was being used,
while **48%** said they had
not.¹⁰

Title

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Retailers launching AI-based personal shopping assistants aim to improve customer experience on their e-commerce platform by replicating a personalized in-store shopping experience. This tool uses large language models (LLMs) to understand, interpret, and respond to customer queries with contextual accuracy, recommending items, answering questions, and assisting with purchases based on each customer's specific needs.

12-18

month

timeline

While few strategy leaders achieved the exact outcomes they anticipated from AI virtual shopping assistants, 96% still considered the initiative a success.

This perception may stem from experiencing unexpected positive results, such as improvements in softer metrics, including:

- Improved personalization.
- Increased engagement.
- Positive survey feedback.¹²

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Implementation key points:

-

Planning includes developing a detailed plan of business requirements, minimum viable product specs, potential challenges, and desired outcomes.

-

Data validation and privacy concerns must be addressed in the early stages of the project to ensure compliance and security.

-

Integration can be complex and typically requires access to an up-to-date product catalog and accurate customer data. Advanced tools may also leverage OpenAI-type models to enrich the process by incorporating additional product

information.

-

Most retailers enhance their existing chatbot capabilities rather than developing or adopting a separate **application**.

-

Testing and deployment occur in stages, to identify and resolve issues before progressing further.

-

New implementations operate within a **continuous feedback loop** to address problem areas and enhance performance over time.

"[The model] is trained with decades of our retail data. It must be able to interact with the other LLMs to make sure that responses are highly contextual, they are tailored to our environment, and that the customer really feels like they're speaking to a person, not to an LLM."

- *Executive Business Strategy, Big Box Retailer*

In addition to the challenges shown in the graph below, strategy leaders struggled with:

- The assistant maintaining conversational context during multi-part interactions
- Latency issues when pulling data from diverse sources
- Real-time inventory integrations

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Retailers are adopting AI-powered personalization systems to improve the shopping experience across both digital and in-store channels. These systems deliver tailored interactions, including personalized product recommendations, customized promotions, and loyalty rewards.

AI-driven personalization leverages individual customer preferences and shopping behaviors to enhance engagement and satisfaction.

6-9

month

timeline

There were large deficits in the number of technical, marketing, and ecommerce leaders who anticipated personalized experiences giving them a competitive advantage and decreasing customer churn and those who experienced these outcomes. Yet, 96% of them still considered this initiative a success. This could be due to improvement that aligns with more detailed KPIs, like:

- Higher conversion rates.
- Increased basket values.
- Better engagement & positive feedback.¹⁴

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Implementation key points:

- **Planning** includes identifying current pain points and defining scope.
- **Collecting and standardizing** customer, store sales, and eCommerce transaction data can all be included in this initiative.
- **For recommendation engines** data science teams build out the engine using LLMs trained on the data collected.
- For **personalized promotions** data science teams may build out an infrastructure that allows them to integrate third-party solutions and plugins. Though they made need

heavy customization.

-

Testing is done in house by key stakeholders so adjustments can be made before rolling out to customers. .

-

Deployment happens in increments across a single brand or to a single group of customers to gauge success and needed refinement.

"We had to heavily customize [a third-party solution]. It has to be relevant for our product set, understand the relationships between our different products and those you're likely to buy with products in your basket... You could buy models and make them work for grocery, for apparel, or wider expectations of retail. That was a main challenge to make it work for our sector."

- *Director of Digital , Big Box Retailer*

In addition to the challenges outlined in the graph below, teams implementing personalization initiatives can anticipate running into data quality issues. These initiatives require clean and structured customer and sales data to be able to execute effectively. Additionally, regulations around data collection and usage can pose a challenge.

15

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Marketing leaders are leveraging AI-driven audience segmentation to deliver highly personalized and relevant content to customers. This approach uses machine learning and predictive analytics to identify distinct customer segments based on behaviors, preferences, and demographics. This Improves targeting accuracy, drives engagement through personalized messaging, and optimizes marketing resource allocation across multiple channels to improve ROI.

6-8

month

timeline

Even with large deficits in the number of marketing leaders who experienced the most anticipated outcomes, 96% of them still considered this initiative to be successful.

This could be due to success that aligns with more targeted metrics, such as:

- Win-back rates.
- Targeting high-value customers.
- Better predict customer lifetime value.
- Increased engagement.¹⁶

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Implementation key points:

-

Planning includes setting clear goals and understanding what KPIs and metrics will be affected.

-

Evaluating current infrastructure across channels allows technical teams to gauge what upgrades might be necessary.

-

Because of the large number of solutions on the market, retail leaders typically **choose vendor solutions** rather than building in house.

-

Tool evaluation and selection

includes multiple vendors, possibly trials, and POCs to ensure the platform is effective and works well with their tech stack.

-

Data cleansing and integration is required to pull all data into a single source for analysis and use. Technical teams are using APIs to facilitate more seamless integrations.

-

Testing is done by marketing teams to refine the solution before deployment.

-

Deployment may happen on a larger scale than other initiatives, but they are A/B testing and continuously optimizing.

"I've realized it takes time to get this all going. I thought it would happen much faster. But just setting up a platform is one thing. Getting the data into it and understanding how to utilize it. I think we underestimated how much time it would take to do that work and really get comfort around it. Then, once you starting getting output, you have to determine how to test it."

- Chief Marketing & Digital Officer, Pet Store Retailer

In addition to those in the graph below, teams implementing marketing segmentation and personalization efforts can face challenges gaining buy-in from stakeholders and addressing the skills gaps they have in their teams to maintain data-driven processes.

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Implementing AI often requires updating existing technology and infrastructure.

"We converted our ERP, which was a massive hairy beast and kind of crazy. What we realized is that their web API is very incomplete. They're working on what they call next gen. There's supposedly going to be an API at some future date that will do everything we want it to do. But our developers have been heads down, deeply focused on creating workarounds that allow our website to communicate with the in-store POS instance and with the ERP directly instead of via the API."

- *Executive Director, eCommerce Retailer*

46%

45%

44%

41%

39%

38%

35%

34%

IT

infrastructure

Improve data

infrastructure

Upskilling staff

Update

eCommerce

platform

Update

inventory

management

systems

Hire

experienced
staff

Update ERP

Update CRM

Data-driven AI initiatives are rarely plug-and-play solutions. They demand up-to-date technology stacks, robust and clean data sets, and seamless, real-time integrations.

Additionally, technical teams must have the skills to build these solutions while teams all

throughout the organization need to understand how to work with these solutions. Retail

leaders should account for the potential costs of these updates when planning their implementation.

We didn't go, "Oh, let's go hire AI experts." I think what we did was get ourselves trained and get on board with these AI solutions first and then start implementing them. So, there were some skill gaps. Even I wasn't aware of many different AI schools, so I started learning about them.

Some of our data scientists and some of our teams do have experience in that. So, getting everyone on one page was something important.

- *Marketing Manager, eCommerce Retailer* Conclusion

As the retail industry embraces AI-based solutions, both consumers and retailers are seeing tangible benefits. Consumers are increasingly comfortable with AI, driven by positive past experiences.

However, consumer trust hinges on clear assurances around data protection and transparency, as evidenced by the 36% of consumers who left retailers over concerns about data misuse. Retailers that proactively address these concerns can unlock greater opportunities for customer engagement and satisfaction.

Currently, many are prioritizing operational initiatives that optimize workflows while enhancing customer experiences. While these efforts are valuable, they often bypass the full potential of customer-focused AI opportunities, which require robust data collection and analysis capabilities.

For retailers willing to invest in the complexity of AI technologies, success is achievable despite initial challenges and costs. The detailed exploration of key

customer-focused AI initiatives demonstrates how leading retailers are leveraging AI to elevate the shopping experience.

By knowing what is required to achieve success, retailers can not only meet consumer expectations, but also foster deeper loyalty, driving growth in an increasingly competitive marketplace.

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18

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The AI Advantage: How retailers are shaping customer experiences with data-driven insights

© 2024 Cascade Insights all rights reserved

20%

20%

20%

20%

20%

0%

5%

10%

15%

20%

25%

18-25

26-35

36-45

46-55

56-65

Age Range

100%

Geography

North America20

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C-suite

VP

Director

22%

20%

20%

19%

19%

17%

18%

19%

20%

21%

22%

Department

22%

13%

11%

10%

10%

8%

5%

5%

4%

3%

3%

2%

0%

5%

10%

15%

20%

25%

Retail Subset

Seniority Level

22%

18%

14% 13% 10% 10%

7% 5%

1%

0%

5%

10%

15%

20%

25%

Geography

76%

17%
6%
0% 20% 40% 60% 80%100%
1,001-5,000
employees
5,001-10,000
employees
10,000+ employees
Organization Size
Series 121

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Marketing Strategist

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- □ Hi, I'm @Kananga5
- □ I'm interested in ...
- □ I'm currently learning ...
- □ I'm looking to collaborate on ...
- □ How to reach me ...
- ☹ Pronouns: ...
- ⚡ Fun fact: ...

Activity

[View all](#)

MarAprMayJunJulAugSepOctNovDecJanFebMWF

Issues, merge requests, pushes, and comments.

2 hours ago

commented on issue [#4](#) "engineering job and thesis" at [engineering tshingombe / thesis honor degree engineering and education technologie](#)

hello

2 hours ago

opened issue [#4](#) "engineering job and thesis" at [engineering tshingombe / thesis honor degree engineering and education technologie](#)

2 hours ago

closed issue [#4](#) "engineering job and thesis" at [engineering tshingombe / thesis honor degree engineering and education technologie](#)

2 hours ago

commented on issue [#4](#) "engineering job and thesis" at [engineering tshingombe / thesis honor degree engineering and education technologie](#)

hello yes i do it experimental_microsoft_career.docx...

1 day ago

opened milestone [%e](#) in [engineering tshingombe / Engineering](#)

1 day ago

opened test_case [#1](#) "engineering" at [engineering tshingombe / Engineering](#)

1 day ago

created project [engineering tshingombe / Engineering](#)

2 days ago

imported project [Kananga5 / ORCID-Source](#)

2 days ago

imported project [Kananga5 / form-microsoft-cmputer-framework-qualification-diploma-question-assessment](#)

2 days ago

imported project [Kananga5 / engineering-tshingombe-theory-pratical-base-framework-asses-met-scotish-sqa](#)

2 days ago

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2 days ago

imported project [Kananga5 / Kananga5](#)

2 days ago

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2 days ago

imported project [Kananga5 / tshingomb-challege-microsoft-build-word-cup-project](#)

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imported project [Kananga5 / scotland-tableau-career-university-college-sqa-framework-engineering](#)

Personal projects

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ORCID Open Source Project

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[View form-microsoft-cmputer-framework-qualification-diploma-question-assessment project](#)
[F](#)

form-microsoft-cmputer-framework-qualification-diploma-question-assessment

computer framework assessment

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[View engineering-tshingombe-theory-pratical-base-framework-asses-met-scotish-sqa project](#)
[E](#)

engineering-tshingombe-theory-pratical-base-framework-asses-met-scotish-sqa

saq mett framework qualification

[0 0 0 0](#)

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About

Pronounced as: The are

Pronouns: The

Engineering electrical

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value="do not insert"/>
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```
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```

arget
*.project
*.classpath
*.settings
atlassian-ide-plugin.xml
*.iml
*.idea
*.py.class
orcid-solr/data/*
orcid-solr/src/main/webapp/solr/data/*
.externalToolBuilders
*.DS_Store
orcid-solr-web/bin/
rebel.xml
deploy.log
orcid-solr-web/src/main/webapp/solr/data/
orcid-solr-web/src/main/webapp/solr/org/data/
orcid-solr-web/src/main/webapp/solr/profile/data/
orcid-solr-web/src/main/webapp/solr/fundingSubType/data
orcid-solr-web/**/_rest_managed.json
Servers/Pivotal tc Server Developer Edition v3.1-config/

```

```
.metadata/
orcid-web/src/main/webapp/static/javascript/angular_orcid_generated.js
orcid-web/src/main/webapp/static/javascript/ng10rcid/
angular_orcid_generated.js
orcid-web/src/main/webapp/static/javascript/ng10rcid/
angular_orcid_generated.js
orcid-web/src/main/webapp/static/javascript/ng10rcid/node_modules/
orcid-activemq/activemq-data/
orcid-activemq/logs/
orcid-message-listener/logs/
*.md.html
orcid-web/src/main/resources/cdn_active_url.txt
.vscode/settings.json
orcid-web/.tern-project
orcid-web/src/main/webapp/static/javascript/ng10rcid/components/**/
node_modules/**
orcid-web/src/main/webapp/static/javas
any have contributed to ORCID's Open Source effort, from direct
contributions of code, to contributions of projects through sub-licensed
code and binaries.
```

```
* [Projects](#Projects)
  * [Sub-licensed code](#sublicense)
  * [Packages](#package) (unmodified binaries)
  * [Other](#other)
```

Also see our active contributors: [CREDITS.md]
(<https://github.com/ORCID/ORCID-Work-in-Progress/blob/master/CREDITS.md>)

```
> ORCID (R) Open Source
> http://orcid.org/OpenSource
>
> Copyright (c) 2013 ORCID, Inc.
> Licensed under an MIT-Style License (MIT)
> https://github.com/ORCID/ORCID-Source/blob/main/LICENSE
> http://orcid.org/OpenSource/license
>
> This copyright and license information (including a link to the full
license) shall be included in its entirety in all copies or substantial
portion of the software.
```

```
--
<a id="Projects"></a>
## Projects
```


Sub-licensed code

The following code has been incorporated into the ORCID code:

****jQuery****

*** **[jQuery JavaScript Library](http://jquery.com/)**** *_(LICENSE: [MIT or GPL Version 2 licenses](http://jquery.org/license))_*

<!--jQuery is a fast, small, and feature-rich JavaScript library. It makes things like HTML document traversal and manipulation, event handling, animation, and Ajax much simpler with an easy-to-use API that works across a multitude of browsers. With a combination of versatility and extensibility, jQuery has changed the way that millions of people write JavaScript. <i>(List of plugins may not be exhaustive)</i>-->

*** **[jQuery UI CSS Framework](http://docs.jquery.com/UI/Theming/API)**** *_(LICENSE: [MIT](http://www.opensource.org/licenses/mit-license.php), [GPL Version 2](http://www.gnu.org/licenses/gpl-2.0.html))_*

*<!--
a robust CSS Framework designed for building custom jQuery widgets.
-->*

*** **jQuery UI Plugins**** *_(LICENSE: [MIT or GPL Version 2 licenses](http://jquery.org/license))_*

- * [jQuery UI Resizable](http://docs.jquery.com/UI/Resizable#theming)**
- * [jQuery UI Selectable](http://docs.jquery.com/UI/Selectable#theming)**
- * [jQuery UI Accordion](http://docs.jquery.com/UI/Accordion#theming)**
- * [jQuery UI Autocomplete](http://docs.jquery.com/UI/Autocomplete#theming)**
- * [jQuery UI Menu](http://docs.jquery.com/UI/Menu#theming)**
- * [jQuery UI Button](http://docs.jquery.com/UI/Button#theming)**
- * [jQuery UI Dialog](http://docs.jquery.com/UI/Dialog#theming)**
- * [jQuery UI Slider](http://docs.jquery.com/UI/Slider#theming)**
- * [jQuery UI Tabs](http://docs.jquery.com/UI/Tabs#theming)**
- * [jQuery UI Datepicker](http://docs.jquery.com/UI/Datepicker#theming)**
- * [jQuery UI Progressbar](http://docs.jquery.com/UI/Progressbar#theming)**

*<!--
The jQuery UI plugins use the jQuery UI CSS Framework to style its look and feel, including colors and background textures.
-->*

```

**OTHER CODE**
* **[Metadata](http://docs.jquery.com/Plugins/Metadata)** _(LICENSE: [MIT](http://www.opensource.org/licenses/mit-license.php), [GPL](http://www.gnu.org/licenses/gpl.html))_

<!--<br>jQuery plugin for parsing metadata from elements<br>-->

* **[jQuery Validation Plugin](https://github.com/jzaefferer/jquery-validation)** _(LICENSE: [MIT](http://www.opensource.org/licenses/mit-license.php), [GPL](http://www.gnu.org/licenses/gpl.html))_

<!--<br>The jQuery Validation Plugin provides drop-in validation for your existing forms, while making all kinds of customizations to fit your application really easy.<br>-->

* **[Angular](https://github.com/angular/angular/blob/master/LICENSE)** _(LICENSE: [MIT](http://www.opensource.org/licenses/mit-license.php))_

<!--<br>Javascript frame work for building complex client applications.<br>-->

* **[Sizzle.js](http://sizzlejs.com/)** _(LICENSE: MIT, BSD, and GPL Licenses)_

<!--<br>A pure-JavaScript CSS selector engine designed to be easily dropped in to a host library.<br>-->

* **[ColorBox](http://www.jacklmoore.com/colorbox)** _(LICENSE: [Standard MIT License](http://www.opensource.org/licenses/mit-license.php))_

<!--<br>a lightweight, customizable lightbox plugin for jQuery<br>-->

* **[password_strength_plugin.js](www.mypocket-technologies.com)**
*modified version* _(LICENSE: [MIT License](https://github.com/ORCID/ORCID-Work-in-Progress/blob/master/orcid-frontent-web/src/main/webapp/static/javascript/plugins.js))_

<!--<br>Password Strength Meter is a jQuery plug-in provide you smart algorithm to detect a password strength. Based on [Firas Kassem orginal plugin](http://phiras.wordpress.com/2007/04/08/password-strength-meter-a-jquery-plugin/)<br>-->

* **[effects.js](http://script.aculo.us)** _(LICENSE: [MIT-style License](http://madrobby.github.com/scriptaculous/license/))_

```

```

<!--<br>User interface effects<br>-->

* **[Prototype JavaScript framework](http://www.prototypejs.org)**
_(LICENSE: [MIT-style license](http://prototypejs.org/license.html))_

<!--<br>Prototype takes the complexity out of client-side web
programming. Built to solve real-world problems, it adds useful
extensions to the browser scripting environment and provides elegant APIs
around the clumsy interfaces of Ajax and the Document Object Model.<br>--
>

* **[Files related to SOLR Configuration]
(http://wiki.apache.org/solr/#Installation_and_Configuration)**
_(LICENSE: [Apache License, Version 2.0]
(http://www.apache.org/licenses/LICENSE-2.0))_

<!--<br>SolrTM is the popular, blazing fast open source enterprise search
platform from the Apache LuceneTM project.<br>-->

* **[DTD Web Application](http://java.sun.com/dtd/web-app_2_3.dtd)**
_(LICENSE: [Apache License, Version 2.0]
(http://www.apache.org/licenses/LICENSE-2.0))_

<!--<br>This is the XML DTD for the Servlet 2.3 deployment
descriptor.<br>-->

* **[KeyStoreFactoryBean]
(http://static.springsource.org/spring-ws/sites/1.5/apidocs/org/
springframework/ws/soap/security/support/KeyStoreFactoryBean.html)**
_(LICENSE: [Apache License Version 2.0]
(http://static.springsource.org/spring-ws/sites/2.0/license.html))_

<!--<br>Spring factory bean for a
[KeyStore](http://docs.oracle.com/javase/6/docs/api/java/security/
KeyStore.html?is-external=true).<br>-->

<a id="package"></a>
### Packages

**SECURITY**
* **[Semantico Spring Security OAuth Library]
(https://github.com/semantico/spring-security-oauth)**

```

```
<!-- <br>This repository was forked the the main spring-security-oath
project to allow us to support multiple redirect URLs. These changes have
subsequently been incorporated into the core product and should be used
in preference to this unless you are developing against the ORCID
codebase.</i> | [Apache License
V2.0](https://github.com/semantico/spring-security-oauth/blob/master/
license.txt) -->
```

```
* [Spring OAuth Security](http://static.springsource.org/spring-
security/oauth/)**<i></i>
```

```
<!-- <br>This project provides support for using Spring Security with
OAuth (1a) and OAuth2. It provides features for implementing both
consumers and providers of these protocols using standard Spring and
Spring Security programming models and configuration idioms. | [Apache
License V
2.0](https://github.com/SpringSource/spring-security-oauth/blob/master/
license.txt)** -->
```

```
* [Spring Framework](http://www.springsource.org/spring-framework)**
<i>org.springframework</i>
```

```
<!--<br>The Spring Framework provides a comprehensive programming and
configuration model for modern Java-based enterprise applications - on
any kind of deployment platform. A key element of Spring is
infrastructural support at the application level: Spring focuses on the
"plumbing" of enterprise applications so that teams can focus on
application-level business logic, without unnecessary ties to specific
deployment environments. | [Apache License
2.0](http://www.apache.org/licenses/LICENSE-2.0)** |-->
```

```
* [jasypt](http://www.jasypt.org/)** - <i>org.jasypt</i>
```

```
<!--<br>Jasypt is a java library which allows the developer to add basic
encryption capabilities to his/her projects with minimum effort, and
without the need of having deep knowledge on how cryptography works. |
**[]()** |-->
```

```
<br>
```

```
**CODE & DATABASE**
```

```
* [Java JDK](http://docs.oracle.com/javase/7/docs/)**
```

```
<!--<br>Java Platform, Standard Edition (Java SE) lets you develop and
deploy Java applications on desktops and servers, as well as in today's
demanding embedded environments. Java offers the rich user interface,
```

performance, versatility, portability, and security that today's applications require. Java Platform, Enterprise Edition (Java EE) 6 is the industry standard for enterprise Java computing. | ****[Oracle Binary Code License Agreement for the Java SE Platform Products and JavaFX]** (<http://www.oracle.com/technetwork/java/javase/terms/license/index.html>)*
* |-->

* ****[Hibernate]** (<http://www.hibernate.org/>)** - *<i>org.hibernate</i>*

*<!--
Hibernate is a collection of related projects enabling developers to utilize POJO-style domain models in their applications in ways extending well beyond Object/Relational Mapping. | ****[]()**** |-->*

* ****[Liquibase]** (<http://www.liquibase.org/>)** - *<i>liquibase.database</i>*

*<!--
Liquibase is an open source (Apache 2.0 Licensed), database-independent library for tracking, managing and applying database changes. It is built on a simple premise: All database changes are stored in a human readable yet trackable form and checked into source control. | ****[Apache License 2.0]** (<http://www.apache.org/licenses/LICENSE-2.0.html>)** |-->*

* ****[Apache Solr]** (<http://lucene.apache.org/solr/>)** - *<i>schema.constants.SolrConstants</i>*

*<!--
SolrTM is the popular, blazing fast open source enterprise search platform from the Apache LuceneTM project. Its major features include powerful full-text search, hit highlighting, faceted search, near real-time indexing, dynamic clustering, database integration, rich document (e.g., Word, PDF) handling, and geospatial search. Solr is highly reliable, scalable and fault tolerant, providing distributed indexing, replication and load-balanced querying, automated failover and recovery, centralized configuration and more. Solr powers the search and navigation features of many of the world's largest internet sites. | ****[]()**** |-->*
*
*

****API SUPPORT****

* ****[Jersey]** (<http://jersey.java.net/>)** *<i>com.sun.jersey.api</i>*

*<!--
Jersey is the open source, production quality, JAX-RS (JSR 311) Reference Implementation for building RESTful Web services, with an API for developers to extend Jersey to suit their needs. | ****[CDDL, Version 1.1]** (http://glassfish.java.net/public/CDDL+GPL_1_1.html)** |-->*

```

* **[c3p0 - JDBC3 Connection and Statement Pooling]
(http://www.mchange.com/projects/c3p0/)** <i>com.mchange.v2.c3p0</i>

<!--<br>c3p0 is an easy-to-use library for making traditional JDBC
drivers "enterprise-ready" by augmenting them with functionality defined
by the jdbc3 spec and the optional extensions to jdbc2. | **[Lesser GNU
Public License (LGPL)](http://www.gnu.org/copyleft/lesser.html)** |-->

* **[Jackson JSON Processor](http://wiki.fasterxml.com/JacksonHome)** -
<i>org.codehaus.jackson</i>

<!--<br>Inspired by the quality and variety of XML tooling available for
the Java platform (StAX, JAXB, etc.), the Jackson is a multi-purpose Java
library for processing JSON data format. Jackson aims to be the best
possible combination of fast, correct, lightweight, and ergonomic for
developers. | **[Apache License (AL)
2.0](http://www.apache.org/licenses/LICENSE-2.0)** |-->

* **[args4j](http://args4j.kohsuke.org/)** - <i>org.kohsuke.args4j</i>

<!--<br>args4j is a small Java class library that makes it easy to parse
command line options/arguments in your CUI application. | **[]()** |-->
<br>

**UTILITIES & TOOLS**
* **[java-bibtex](http://code.google.com/p/java-bibtex/)**
<i>org.jbibtex</i>

<!--<br>Java BibTeX Parser and Formatter. | **[BSD
3](http://opensource.org/licenses/BSD-3-Clause)** |-->

* **[Yammer Metrics](http://metrics.codahale.com/)**
<i>com.yammer.metrics</i>

<!--<br>Developed by Yammer to instrument their JVM-based backend
services, Metrics provides a powerful toolkit of ways to measure the
behavior of critical components in your production environment. |
**[Apache License 2.0](http://www.apache.org/licenses/LICENSE-2.0.html)**
|-->

* **[Apache Commons](http://commons.apache.org/)** -
<i>org.apache.commons</i>

<!--<br>The Commons Proper is dedicated to one principal goal: creating
and maintaining reusable Java components. The Commons Proper is a place

```

*for collaboration and sharing, where developers from throughout the Apache community can work together on projects to be shared by the Apache projects and Apache users. | **[Apache License 2.0](http://www.apache.org/licenses/LICENSE-2.0.html)** |-->*

** **[aspectj](http://eclipse.org/aspectj/)** - <i>org.aspectj</i>*

*<!--
 An extension to the Java(tm) programming language that enables clean modularization of crosscutting concerns, such as error checking and handling, synchronization, context-sensitive behavior, performance optimizations, monitoring and logging, debugging support, and multi-object protocols. | **[Eclipse Public License](http://www.eclipse.org/org/documents/epl-v10.php)** |-->*

** **[FreeMarker](http://freemarker.sourceforge.net/)** - <i>freemarker.templat</i>*

*<!--
FreeMarker is a "template engine"; a generic tool to generate text output (anything from HTML to autogenerated source code) based on templates. It's a Java package, a class library for Java programmers. It's not an application for end-users in itself, but something that programmers can embed into their products. | **[]()** |-->*

** **[Simple Logging Facade for Java - SLF4J](http://www.slf4j.org/)** - <i>org.slf4j</i>*

*<!--
The Simple Logging Facade for Java or (SLF4J) serves as a simple facade or abstraction for various logging frameworks, e.g. java.util.logging, log4j and logback, allowing the end user to plug in the desired logging framework at deployment time. | **[]()** |-->*

** **[SAX](http://www.saxproject.org/)** - <i>org.xml.sax</i>*

*<!--
SAX is the Simple API for XML, originally a Java-only API. SAX was the first widely adopted API for XML in Java, and is a "de facto" standard. The current version is SAX 2.0.1, and there are versions for several programming language environments other than Java. | **[]()** |-->*

>

*
*

TESTING

** **[JUnit](http://en.wikipedia.org/wiki/JUnit)** <i>org.junit</i>*

```

<!--<br>JUnit is a unit testing framework for the Java programming
language. | [Common Public License
(CPL)](http://opensource.org/licenses/cpl1.0.php)** |-->

* [DbUnit](http://www.dbunit.org/)** - <i>org.dbunit</i>

<!--<br>DbUnit is a JUnit extension (also usable with Ant) targeted at
database-driven projects that, among other things, puts your database
into a known state between test runs. This is an excellent way to avoid
the myriad of problems that can occur when one test case corrupts the
database and causes subsequent tests to fail or exacerbate the damage. |
[]()** |-->

* [XMLUnit](http://xmlunit.sourceforge.net/api/overview-summary.html)**
- <i>org.custommonkey.xmlunit</i>

<!--<br>XMLUnit provides extensions to the JUnit framework to allow
assertions to be made about XML content. | []()** |-->

* [Hamcrest](http://hamcrest.org/)** - <i>org.hamcrest</i>

<!--<br>Hamcrest is a framework for creating matchers ('Hamcrest' is an
anagram of 'matchers'), allowing match rules to be defined declaratively.
These matchers have uses in unit testing frameworks such as JUnit [2] and
jMock. | []()** |-->

* [Mockito](http://code.google.com/p/mockito/)** - <i>org.mockito</i>

<!--<br>Mockito is a mocking framework that tastes really good. It lets
you write beautiful tests with clean & simple API. Mockito doesn't give
you hangover because the tests are very readable and they produce clean
verification errors. Read more about features & motivations. | []()**
|-->

* [SeleniumHQ](http://docs.seleniumhq.org/)** -
<i>org.openqa.selenium</i>

<!--<br>Selenium automates browsers. That's it. What you do with that
power is entirely up to you. Primarily it is for automating web
applications for testing purposes, but is certainly not limited to just
that. Boring web-based administration tasks can (and should!) also be
automated as well. | []()** |-->

<a id="other"></a>
### OTHER

```

The font used for the ORCID website

Many have contributed to ORCID's Open Source effort, from direct contributions of code, to contributions of projects through sub-licensed code and binaries.

Active Contributors

```
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Open source contributors

ORCID appreciates the several significant contributions from the Open Source community:

```
* Marlena Erdos<a href="https://orcid.org/0000-0003-2337-8252" width="16"
height="16" target="_blank"></a> - provided insight and advice while reviewing ORCID's
site security procedures and policies.
```

```
* [Stian Soiland-Reyes](https://github.com/stain)<a
href="https://orcid.org/0000-0001-9842-9718" width="16" height="16"
target="_blank"></a> - provided initial RDF support for ORCID:
```

```
    * [RDF support for ORCID - FOAF profile]
    (https://github.com/ORCID/ORCID-Source/pull/235)
```

* [patches for contribution above](https://github.com/ORCID/ORCID-Source/pull/656)

Localizations

* Arabic Registry & Outreach Resources localization: Massoud Alshareef , Dina Hashim, and Mohamad Mostafa

* Czech Registry & Outreach Resources localization: Lenka Klempová , Ivan Masár, Pavla Rygelová

* German Outreach Resources localization: Heinz Pampel , Christian Pietsch , Laura Rothfritz, Paul Vierkant

* Japanese Registry localization: Soichi Tokizane

```
* Korean Registry localization: Senator Jeong <a href="https://orcid.org/0000-0002-4004-3510" width="16" height="16" target="_blank"></a>
```

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Many thanks to SyncRO Soft for their support in the donation of the [oXygen XML Editor](https://www.oxygenxml.com).

Thanks also [BrowserStack](https://www.browserstack.com) to for providing robust and agile browser testing for our development team.

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- Submission Type: **Call for Papers Proposals**
- Presentation Proposal Status: **Active**

Speaker(s)

1. tt

tshingombe tshi tshitadi, engen (he/him/his)

Position:

engineering

Department:
engineering

Organization:
engineering

Role:

Facilitator

Gender:
Man

Ethnicity:
African American

Biography

4.description :at the heart of solutions to framework qualification and
national trade

implementation sub sector training trainer experiemental work place
industrial more student
and instituts college trade years external internal work value
desterious policy design implementation , 5. General analysis: in order
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Presentation Proposal Details

Audience Experience Level

- General (Everyone will obtain value)
- Early (0-3 years)
- Mid (4-9 years)
- Senior (10+ years)

Audience Career Track

- All
- Engineering/Architecture
- Management/Executive
- Operational/Tactical

Preferred Presentation Type

- Breakout Session
- Bright Ideas Roundtable

FULL DESCRIPTION

Proposal of thesis content / final project
Content
1 .name of thesis

2.index

3. Introduction. 4.description . 5.general.analizing

KEY DIFFERENTIATOR / ORIGINALITY

4.desceiption :at the heart of solutions to framework qualicaftion and national trade

implementation sub sector training trainer experiemental work place

industrial more student

and instituts college trade years external internal work value increase price macro

Audience Take-Aways

1. - 3.3..brief description : the course electrical power system use or business in trade theory pratical system to master system value more stability of movement quantum mechanics transformation of electrostatic dynamic low stability,relativity of charge celerity basic and advance i
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1. Content Area

Governance, Risk and Compliance (GRC)

Additional Details/Supporting Information

1. Recommendation/Endorsement

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Email

3. Have you presented this session or content at any other conferences, webinars or events?

Yes

4. If Yes, what other conference(s) or event(s) was this content presented at?

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5. Prior Speaking Engagements/Experience

engineering

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7. Books, Papers, Etc.

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45-54

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Man

5. **If you selected "Not Listed", please list your gender below:**

male

6. **Pronouns:**

He/his

7. **If you selected "Not Listed", please list your pronouns below:**

engineering

8. **What ethnicity/race best describes you? (US)**

America Indian or Alaska Native

9. **US: If you selected "Other ethnic group", please list it below:**

black

10. **What ethnicity/race best describes you? (APAC)**

Prefer not to answer

11. **APAC: If you selected "Other ethnic group", please list it below:**

12. **What ethnicity/race best describes you? (UK)**

Mixed or Multiple Ethnic Groups: White and Black Caribbean, White and Black African, White and Asian, Any other Mixed or Multiple ethnic background

13. **UK: If you selected "Other ethnic group", please list it below:**

uk

14. **Highest level of education (US):**

High school graduate, diploma or the equivalent (for example: GED)

15. **Highest level of education (UK):**

College or university

16. **What is your preferred spoken/written language?**

english

17. **Do you identify as a member of any of the following groups?**

Veteran or Prior Armed Forces Service

18. **If you selected "Persons with a Disability", please list disability below:**

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Hours

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Minutes

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Speaker(s)

1. [tshingombe tshi tshitadi, engin \(he/him/his\)](#)
(Role: Facilitator)

Presentation Proposal Details

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Event Speaker Contact

For content related questions, please contact Bradley Barth at bbarth@isc2.org or (571) 431-1706

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